

Comments on Notice of Proposed Rulemaking 04-37

Concerning Amendment of Part 15 regarding new requirements and measurement guidelines for Access Broadband over Power Line Systems

I would like to begin by commending the Commission for recognizing that licensed radio services must be protected from harmful interference that may be caused by Access Broadband over Power Line deployments, and for proposing both requirements that BPL systems and devices include capabilities to mitigate harmful interference when it occurs, and administrative requirements to aid in the identification and resolution of harmful interference from Access BPL systems.

I would like to add these comments on specific paragraphs

Paragraph 26) Ambient Corporation stated that they could avoid interference to nearby transceivers using the inherent frequency agile characteristics of it's Orthogonal Frequency Division Multiplexing technology. This system will be of no benefit to Shortwave Listeners, who do not transmit at all. And any two way High Frequency user would have to transmit first to clear a frequency, before being able to listen for another station.

Paragraph 29) Measurements should be made in-situ; it is the only way that line faults or other discontinuities (that could exacerbate radiation) can be detected and corrected prior to activation.

Paragraph 33) I commend the Commission for proceeding cautiously, and proposing to continue to maintain the current Part 15 limits on Access Broadband over Power Line Systems. I think, though, that the Part 15 limits are too lenient, as demonstrated in the recent filing on Access BPL by the NTIA. The NTIA data are similar in many respects to the predictions developed by ARRL staff a couple years ago. My hope is that the Commission will heed the NTIA recommendations, and amend Part 15 to bring it in to compliance with these scientifically collected results.

Paragraph 34) I strongly disagree with the Commission when they state that existing Part 15 devices do not cause harmful interference to licensed radio operations. In many cases, harmful interference does and has in fact occurred, but it has proved difficult to impossible to identify the location or owner of the offending Part 15 device. Furthermore, although the power levels used by the Part 15 devices are indeed lower than those employed by licensed services, the licensed services are often in communications contact with other licensed stations quite distant from their own locations, and even low levels of harmful radiation from Part 15 devices can obliterate reception of these distant signals.

Paragraph 35) It is indeed the case that many electric utilities have been unresponsive to complaints of interference from licensed radio users. This interference is often caused by rectification (corroded contacts) or corona discharge, and the poor track record of utilities in resolving these problems gives licensed users of the High Frequency spectrum little confidence that they will be any more capable of

resolving interference problems caused by Access BPL.

Paragraph 37) In rural areas, it is often the case that portable and mobile the Public Safety Radio Systems operate with signal levels that are in fact very little above the noise floor. Indeed, in some areas, such as in canyons or mountainous areas, Public Safety Radio Systems are sometimes unusable or very nearly so. Ironically, proponents of Access BPL tout the technology as well-adapted to provide broadband access to such sparsely populated rural areas. In such areas, Access BPL is quite likely to cause interference to mobile and portable Public Radio Systems, that are being used near their operational limits.

Paragraph 42) I agree that Access BPL systems currently deployed should be required to be brought into compliance with the new rules. The proponents and providers of Access BPL systems assert confidently that Access BPL systems will not cause harmful interference to licensed users of radio communications. They should therefore assent to bring their systems into compliance with new rules should regulatory changes be found necessary to avoid causing harmful interference to licensed services. I think that 3-4 months is a reasonable deployment period for bringing an existing deployment into compliance.

Furthermore, interference mitigation using existing methods must be available 24/7, and be immediate upon receipt of a complaint of interference.

Paragraph 43) I agree with this notification requirement. With present Part 15 devices, it is often next to impossible to identify the source of harmful interference from an unlicensed device. This publicly accessible database would go a long way towards making it possible to indentify an offending Part 15 device. The database must be readily available (on the internet), requirements for keeping it up to date should be in place, and penalties should be imposed for failing to keep such a database up to date within these requirements. To mitigate privacy concerns, customer data should not be kept in the database, but it should include information sufficient to allow a victim of harmful interference to identify the owner of the offending system, so that they can be notified.

Furthermore, consumers of Access BPL services should be properly informed that they must both expect and accept interference from licensed radio services. Notice of this interference must be provided by the Access BPL provider, and receipt acknowledged by the consumer, in writing, with a dated signature.

Contrary to the assertions of the Access BPL industry, it is highly likely, in fact, inevitable, that Access BPL systems will indeed cause harmful interference to licensed users of the radio frequency spectrum. The principles behind the radiation of Transverse Electromagnetic (TEM) waves were demonstrated mathematically by the Scottish mathematician, James Clerk Maxwell, and empirically by the German physicist Heinrich Hertz, in the latter half of the 19th century. To provide low loss transmission of radio frequency energy along a wire requires the prevention of electromagnetic radiation from that wire. This requires a carefully (and closely, relative to the

wavelength) spaced pair of conductors fed with currents 180 degrees out of phase, so that the field from one conductor will cancel with those from the other. This is accomplished using a line such as an ordinary twisted pair, as DSL uses, or the common 300 ohm TV twinlead available from any department store. Alternatively, a shielded conductor, such as the coaxial lines commonly used in Cable television systems, can be used. Access BPL uses neither of these types of transmission lines; electric power transmission lines were designed to transmit electric power at 60 hertz (a very long wavelength), not at radio waves at 1700-80,000,000 hertz (very short wavelengths). The spacing of the conductors on power transmission lines is too great (at short radio frequency wavelengths) to enable efficient cancellation of high frequency electromagnetic waves emanating from the cables. The fundamental physics of the radiation of Transverse Electromagnetic waves are not going to change for the convenience of the proponents and investors in Access BPL technology.

Respectfully Submitted,

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